

**INFORMATION DISCLOSURE
CITATION IN AN
APPLICATION**

(PTO-1449)



ATTY. DOCKET NO.
5918/FPS/MMCS/APC/DV

SERIAL NO.
09/943,955

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Technology Center 2100

APPLICANT
SHANMUGASUNDRAM et al.

FILING DATE
August 31, 2001

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U.S. PATENT DOCUMENTS

EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE
LTUE	4,796,194	01/03/89	Atherton			08/20/86
LTUE	5,089,970	02/18/92	Lee et al.			10/05/89
LTUE	5,108,570	04/28/92	Wang			03/30/90
LTUE	5,220,517	06/15/93	Sierk et al.			08/31/90
LTUE	5,236,868	08/17/93	Nulman			04/20/90
LTUE	5,260,868	11/09/93	Gupta et al.			10/15/91
LTUE	5,295,242	03/15/94	Mashruwala et al.			11/02/90
LTUE	5,309,221	05/03/94	Fischer et al.			12/31/91
LTUE	5,329,463	07/12/94	Sierk et al.			01/13/93
LTUE	5,367,624	11/22/94	Cooper			06/11/93
LTUE	5,398,336	03/14/95	Tantry et al.			06/16/93
LTUE	5,402,367	03/28/95	Sullivan et al.			07/19/93
LTUE	5,408,405	04/18/95	Mozumder et al.			09/20/93
LTUE	5,410,473	04/25/95	Kaneko et al.			12/16/92

FOREIGN PATENT DOCUMENTS

EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
						Yes	No
LTUE	01-283934	11/15/89	Japan			X	
LTUE	2,050,247	08/29/91	Canada			X	

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

LTUE	Dishon, G., D. Eylon, M. Finarov, and A. Shulman. "Dielectric CMP Advanced Process Control Based on Integrated Monitoring." Ltd. Rehoveth, Israel: Nova Measuring Instruments. <i>no date</i>
LTUE	Runyan, W. R., and K. E. Bean. 1990. "Semiconductor Integrated Circuit Processing Technology." pg. 48. Reading, Massachusetts: Addison-Wesley Publishing Company.

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LTUE	5,490,097	02/06/96	Swenson et al.			08/06/93
LTUE	5,495,417	02/27/96	Fuduka et al.			03/16/93
LTUE	5,497,316	03/05/96	Sierk et al.			04/04/95
LTUE	5,503,707	04/02/96	Maung et al.			09/22/93
LTUE	5,508,947	04/16/96	Sierk et al.			05/13/94
LTUE	5,629,216	05/13/97	Wijaranakula et al.			02/27/96
LTUE	5,657,254	08/12/97	Sierk et al.			04/15/96
LTUE	5,661,669	08/26/97	Mozumder et al.			06/07/95
LTUE	5,694,325	12/02/97	Fukuda et al.			11/22/95
LTUE	5,698,989	12/16/97	Nulman			09/13/96
LTUE	5,719,495	02/17/98	Moslehi			06/05/96
LTUE	5,740,429	04/14/98	Wang et al.			07/07/95
LTUE	5,751,582	05/12/98	Saxena et al.			09/24/96
LTUE	5,754,297	05/19/98	Nulman			04/14/97
LTUE	5,764,543	06/09/98	Kennedy			06/16/95

FOREIGN PATENT DOCUMENTS

EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
						Yes	No
LTUE	2,165,847	08/29/91	Canada			X	
LTUE	2,194,855	08/29/91	Canada			X	

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

LTUE	Zorich, Robert. 1991. <i>Handbook of Quality Integrated Circuit Manufacturing</i> . pp. 464-498 San Diego, California: Academic Press, Inc.
LTUE	Rampalli, Prasad, Arakere Ramesh, and Nimish Shah. 1991. <i>CEPT—A Computer-Aided Manufacturing Application for Managing Equipment Reliability and Availability in the Semiconductor Industry</i> . New York, New York: IEEE.

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LTUE	5,808,303	09/15/98	Schlagheck et al.			01/29/97
LTUE	5,838,595	11/17/98	Sullivan et al.			11/25/96
LTUE	5,883,437	03/16/99	Maruyama et al.			12/28/95
LTUE	5,910,011	06/08/99	Cruse			05/12/97
LTUE	6,054,379	04/25/00	Yau et al.			02/11/98

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EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
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LTUE	05-151231	06/18/93	Japan				X
LTUE	05-216896	08/27/93	Japan				X
LTUE	05-266029	10/15/93	Japan				X
LTUE	06-110894	04/22/94	Japan				X
LTUE	06-176994	06/24/94	Japan				X
LTUE	06-252236	09/09/94	Japan				X
LTUE	06-260380	09/16/94	Japan				X
LTUE	08-149583	06/07/96	Japan			X	
LTUE	09-34535	02/07/97	Japan			X	
LTUE	EP 0877308 A2	11/11/98	Europe			X	
LTUE	11-67853	03/09/99	Japan			X	
LTUE	1072967A3	11/21/01	Europe			X	

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

LTUE	Moyne, James R., Nauman Chaudhry, and Roland Telfeyan. 1995. "Adaptive Extensions to a Multi-Branch Run-to-Run Controller for Plasma Etching." <i>Journal of Vacuum Science and Technology</i> . Ann Arbor, Michigan: University of Michigan Display Technology Manufacturing Center.
LTUE	Moyne, James, Roland Telfeyan, Arnon Hurwitz, and John Taylor. August 1995. "A Process-Independent Run-to-Run Controller and Its Application to Chemical-Mechanical Planarization." <i>SEMI/IEEE Advanced Semiconductor Manufacturing Conference and Workshop</i> . Ann Arbor, Michigan: The University of Michigan, Electrical Engineering & Computer Science Center for Display Technology & Manufacturing.

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EXAMINER'S INITIALS	PATENT APPLICATION NO.	FILING DATE	NAME	TITLE	CLASS	SUB- CLASS
LTUE	09/363,966	07/29/99	Arackaparambil et al.	Computer Integrated Manufacturing Techniques		
LTUE	09/469,227	12/22/99	Somekh et al.	Multi-Tool Control System, Method and Medium		
LTUE	09/619,044	07/19/00	Yuan	System and Method of Exporting or Importing Object Data in a Manufacturing Execution System		
LTUE	09/637,620	08/11/00	Chi et al.	Generic Interface Builder		
LTUE	09/656,031	09/06/00	Chi et al.	Dispatching Component for Associating Manufacturing Facility Service Requestors with Service Providers		

FOREIGN PATENT DOCUMENTS

EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUB- CLASS	Translation
						Yes No

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

LTUE	Zhou, Zhen-Hong and Rafael Reif. August 1995. "Epi-Film Thickness Measurements Using Emission Fourier Transform Infrared Spectroscopy—Part II: Real-Time <i>in Situ</i> Process Monitoring and Control." IEEE Transactions on Semiconductor Manufacturing, Vol. 8, No. 3.
LTUE	Telfeyan, Roland, James Moyne, Nauman Chaudhry, James Pugmire, Scott Shellman, Duane Boning, William Moyne, Arnon Hurwitz, and John Taylor. October 1995. "A Multi-Level Approach to the Control of a Chemical-Mechanical Planarization Process." Minneapolis, Minnesota: 42 nd National Symposium of the American Vacuum Society.
LTUE	Chang, E., B. Stine, T. Maung, R. Divecha, D. Boning, J. Chung, K. Chang, G. Ray, D. Bradbury, O. S. Nakagawa, S. Oh, and D. Bartelink. December 1995. "Using a Statistical Metrology Framework to Identify Systematic and Random Sources of Die- and Wafer-level ILD Thickness Variation in CMP Processes." Washington, D.C.: International Electron Devices Meeting.

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EXAMINER'S INITIALS	PATENT APPLICATION NO.	FILING DATE	NAME	TITLE	CLASS	SUB- CLASS
LTUE	09/655,542	09/06/00	Yuan	System, Method and Medium for Defining Palettes to Transform an Application Program Interface for a Service		
LTUE	09/725,908	11/30/00	Chi et al.	Dynamic Subject Information Generation in Message Services of Distributed Object Systems		
LTUE	09/800,980	03/08/01	Hawkins et al.	Dynamic and Extensible Task Guide		
LTUE	09/811,667	03/20/01	Yuan et al.	Fault Tolerant and Automated Computer Software Workflow		
LTUE	09/927,444	08/13/01	Ward et al.	Dynamic Control of Wafer Processing Paths in Semiconductor Manufacturing Processes		
LTUE	09/928,473	08/14/01	Koh	Tool Services Layer for Providing Tool Service Functions in Conjunction with Tool Functions		

FOREIGN PATENT DOCUMENTS

EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUB- CLASS	Translation	
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LTUE	Dishon, G., M. Finarov, R. Kipper, J.W. Curry, T. Schraub, D. Trojan, 4 th Stambaugh, Y. Li and J. Ben-Jacob. February 1996. "On-Line Integrated Metrology for CMP Processing." Santa Clara, California: VMIC Speciality Conferences, 1 st International CMP Planarization Conference.
LTUE	Smith, Taber, Duane Boning, James Moyne, Arnon Hurwitz, and John Curry. June 1996. "Compensating for CMP Pad Wear Using Run by Run Feedback Control." Santa Clara, California: VLSI Multilevel Interconnect Conference.
LTUE	Boning, Duane, William Moyne, Taber Smith, James Moyne, Roland Telfeyan, Arnon Hurwitz, Scott Shellman, and John Taylor. October 1996. "Run by Run Control of Chemical-Mechanical Polishing." <i>IEEE Trans. CPMT (C)</i> , Vol. 19, No. 4, pp. 307-314.
LTUE	SEMI. [1986] 1996. "Standard for Definition and Measurement of Equipment Reliability, Availability, and Maintainability (RAM)." SEMI E10-96.

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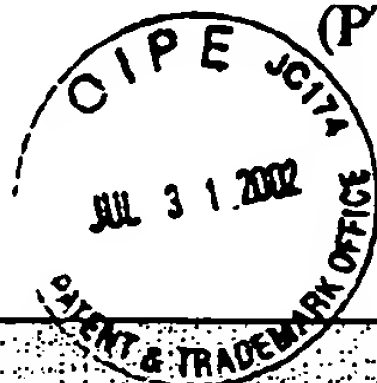
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LTUE	09/928,474	08/14/01	Krishnamurthy et al.	Experiment Management System, Method and Medium		

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						Yes No

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LTUE	Van Zant, Peter. 1997. <i>Microchip Fabrication: A Practical Guide to Semiconductor Processing</i> . Third Edition, pp. 472-478. New York, New York: McGraw-Hill.
LTUE	Campbell, W. Jarrett, and Anthony J. Toprac. February 11-12, 1998. "Run-to-Run Control in Microelectronics Manufacturing." Advanced Micro Devices, TWMCC.
LTUE	Edgar, Thomas F., Stephanie W. Butler, Jarrett Campbell, Carlos Pfeiffer, Chris Bode, Sung Bo Hwang, and K.S. Balakrishnan. May 1998. "Automatic Control in Microelectronics Manufacturing: Practices, Challenges, and Possibilities." <i>Automatica</i> , Vol. 36, pp. 1567-1603, 2000.
LTUE	Moyne, James, and John Curry. June 1998. "A Fully Automated Chemical-Mechanical Planarization Process." Santa Clara, California: VLSI Multilevel Interconnection (V-MIC) Conference.
LTUE	SEMI. July 1998. <i>New Standard: Provisional Specification for CIM Framework Domain Architecture</i> . Mountain View, California: SEMI Standards. SEMI Draft Doc. 2817.
LTUE	Consilium. August 1998. <i>Quality Management Component: QMCTM and QMC-LinkTM Overview</i> . Mountain View, California: Consilium, Inc.
LTUE	Chemali, Chadi El, James Moyne, Kareemullah Khan, Rock Nadeau, Paul Smith, John Colt, Jonathan Chapple-Sokol, and Tarun Parikh. November 1998. "Multizone Uniformity Control of a CMP Process Utilizing a Pre and Post-Measurement Strategy." Seattle, Washington: SEMETECH Symposium.
LTUE	Consilium. 1998. <i>FAB300TM</i> . Mountain View, California: Consilium, Inc.
LTUE	Khan, Kareemullah, Victor Solakhain, Anthony Ricci, Tier Gu, and James Moyne. 1998. "Run-to-Run Control of ITO Deposition Process." Ann Arbor, Michigan.

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LTUE	Consilium. January 1999. "FAB300™: Consilium's Next Generation MES Solution of Software and Services which Control and Automate Real-Time FAB Operations." www.consilium.com/products/fab300_page.htm#FAB300 Introduction
LTUE	Consilium. July 1999. "Increasing Overall Equipment Effectiveness (OEE) in Fab Manufacturing by Implementing Consilium's Next-Generation Manufacturing Execution System - MES II." Semiconductor Fabtech Edition 10.
LTUE	Consilium Corporate Brochure. October 1999. www.consilium.com
LTUE	Moyne, James. October 1999. "Advancements in CMP Process Automation and Control." Hawaii: (Invited paper and presentation to) Third International Symposium on Chemical Mechanical Polishing in IC Device Manufacturing: 196 th Meeting of the Electrochemical Society.
LTUE	Consilium. November 1999. <i>FAB300™ Update</i> .
LTUE	SEMI. 2000. "Provisional Specification for CIM Framework Scheduling Component." San Jose, California. SEMI E105-1000.
LTUE	Lee, Brian, Duane S. Boning, Winthrop Baylies, Noel Poduje, Pat Hester, Yong Xia, John Valley, Chris Koliopoulos, Dale Hetherington, HongJiang Sun, and Michael Lacy. April 2001. "Wafer Nanotopography Effects on CMP: Experimental Validation of Modeling Methods." San Francisco, California: Materials Research Society Spring Meeting.
LTUE	NovaScan 2020. February 2002. "Superior Integrated Process Control for Emerging CMP High-End Applications."

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LTUE	4,698,766	10/06/87	Entwistle et al.			05/17/85
LTUE	4,967,381	10/30/90	Lane et al.			07/06/89
LTUE	5,208,765	05/04/93	Turnbull			07/20/90
LTUE	5,226,118	07/06/93	Baker et al.			01/29/91
LTUE	5,231,585	07/27/93	Kobayashi et al.			06/20/90
LTUE	5,420,796	05/30/95	Weling et al.			12/23/93
LTUE	5,469,361	11/21/95	Moyne			06/06/94
LTUE	5,525,808	06/11/96	Irie et al.			12/20/94
LTUE	5,586,039	12/17/96	Hirsch et al.			02/27/95
LTUE	5,603,707	02/18/97	Trombetta et al.			11/28/95
LTUE	5,664,987	09/09/97	Renteln			09/04/96
LTUE	5,812,407	09/22/98	Sato et al.			08/12/97
LTUE	5,828,778	10/27/98	Hagi et al.			06/12/96
LTUE	5,832,224	11/03/98	Fehskens et al.			06/14/96

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EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
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LTUE	61-171147	08/01/86	Japan				X
LTUE	6-184434	07/05/94	Japan				X
LTUE	0 621 522 A2	10/26/94	Europe			X	
LTUE	8-50161	02/20/96	Japan				X
LTUE	8-304023	11/22/96	Japan				X

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

LTUE	February 1984. "Method and Apparatus of in Situ Measurement and Overlay Error Analysis for Correcting Step and Repeat Lithographic Cameras." <i>IBM Technical Disclosure Bulletin</i> , pp. 4855-4859.
LTUE	October 1984. "Method to Characterize the Stability of a Step and Repeat Lithographic System." <i>IBM Technical Disclosure Bulletin</i> , pp. 2857-2860.

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LTUE	5,859,964	01/12/99	Wang et al.			10/25/96
LTUE	5,863,807	01/26/99	Jang et al.			03/15/96
LTUE	5,870,306	02/09/99	Harada			06/13/97
LTUE	5,903,455	05/11/99	Sharpe, Jr. et al.			12/12/96
LTUE	5,916,016	06/29/99	Bothra			10/23/97
LTUE	5,923,553	07/13/99	Yi			10/05/96
LTUE	5,930,138	07/27/99	Lin et al.			09/10/97
LTUE	5,940,300	08/17/99	Ozaki			05/08/97
LTUE	5,960,214	09/28/99	Sharpe, Jr. et al.			12/04/96
LTUE	5,963,881	10/05/99	Kahn et al.			10/20/97
LTUE	5,982,920	11/09/99	Tobin, Jr. et al.			01/08/97
LTUE	6,041,270	03/21/00	Steffan et al.			12/05/97
LTUE	6,078,845	06/20/00	Friedman			11/25/96
LTUE	6,112,130	08/29/00	Fukuda et al.			10/01/97
LTUE	6,148,246	11/14/00	Kawazome			06/10/98

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LTUE	0 747 795 A2	12/11/96	Europe			X	
LTUE	10-173029	06/26/98	Japan				X
LTUE	0 895 145 A1	02/03/99	Europe			X	
LTUE	11-126816	05/11/99	Japan				X

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

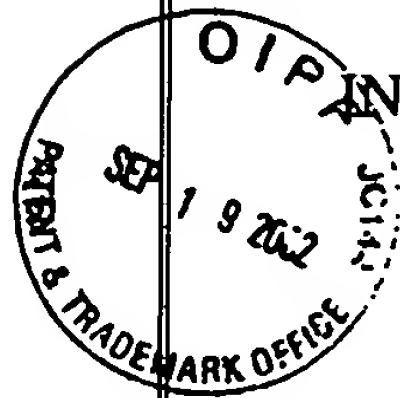
LTUE	Schmid, Hans Albrecht. 1995. "Creating the Architecture of a Manufacturing Framework by Design Patterns." Austin, Texas: OOPSLA.
LTUE	Baliga, John. July 1999. "Advanced Process Control: Soon to be a Must." Cahners Semiconductor International. www.semiconductor.net/semiconductor/issues/issues/1999/jul99/docs/feature1.asp

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LTUE	6,175,777	01/16/01	Kim			01/16/98
LTUE	6,178,390	01/23/01	Jun			09/08/98
LTUE	6,185,324	02/06/01	Ishihara et al.			01/31/95
LTUE	6,192,291	02/20/01	Kwon			10/08/98
LTUE	6,197,604	03/06/01	Miller et al.			10/01/98
LTUE	6,211,094	04/03/01	Jun et al.			08/23/99
LTUE	6,226,792	05/01/01	Goiffon et al.			10/14/98
LTUE	6,230,069	05/08/01	Campbell et al.			06/26/98
LTUE	6,236,903	05/22/01	Kim et al.			09/25/98
LTUE	6,240,330	05/29/01	Kurtzberg et al.			05/28/97

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EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
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LTUE	11-135601	05/21/99	Japan				X
LTUE	WO 00/05759	02/03/00	WO			X	
LTUE	WO 00/35063	06/15/00	WO			X	

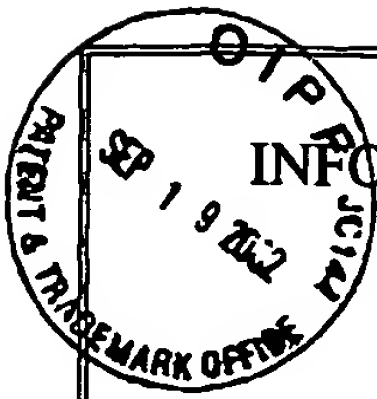
OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

LTUE	July 5, 2001. "Motorola and Advanced Micro Devices Buy ObjectSpace Catalyst Advanced Process Control Product for Five Wafer Fabs." Semiconductor FABTECH. www.semiconductorfabtech.com/industry.news/9907/20.07.shtml
LTUE	October 15, 2001. Search Report prepared by the Austrian Patent Office for Singapore Patent Application No. 200004286-1.
LTUE	Johnson, Bob. June 10, 2002. "Advanced Process Control Key to Moore's Law." Gartner, Inc.
LTUE	July 9, 2002. International Search Report prepared by the European Patent Office for PCT/US01/24910.
LTUE	July 29, 2002. International Search Report prepared by the European Patent Office for PCT/US01/27407.
LTUE	Sonderman, Thomas. 2002. "APC as a Competitive Manufacturing Technology: AMD's Vision for 300mm." AEC/APC.

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August 31, 2001

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EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE
LTUE	6,240,331	05/29/01	Yun			08/18/98
LTUE	6,248,602	06/19/01	Bode et al.			11/01/99
LTUE	6,252,412	06/26/01	Talbot et al.			01/08/99
LTUE	6,263,255	07/17/01	Tan et al.			05/18/98
LTUE	6,292,708	09/18/01	Allen et al.			06/11/98
LTUE	6,298,274	10/02/01	Inoue			09/01/99
LTUE	6,303,395	10/16/01	Nulman			06/01/99
LTUE	6,345,315	02/05/02	Mishra			08/12/98
LTUE	6,366,934	04/02/02	Cheng et al.			06/02/99

FOREIGN PATENT DOCUMENTS

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LTUE	WO 00/79355 A1	12/28/00	WO			X	
LTUE	2001-76982	03/23/01	Japan				X
LTUE	WO 01/33501 A1	05/10/01	WO			X	

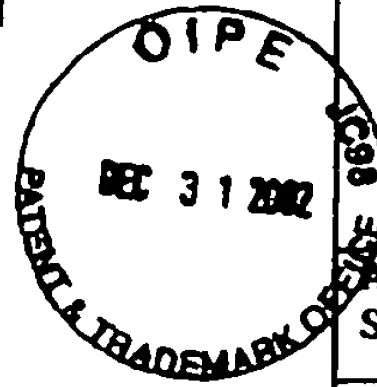
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LTUE	5,270,222	12/14/93	Moslehi			12/31/90
LTUE	5,375,064	12/20/94	Bollinger			12/02/93
LTUE	5,599,423	02/04/97	Parker et al.			06/30/95
LTUE	5,844,554	12/01/98	Geller et al.			09/17/96

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EXAMINER'S INITIALS	PUBLICATION/ PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
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LTUE	WO 95/34866	12/21/95	WO			X	
LTUE	WO 98/45090	10/15/98	WO			X	
LTUE	EP 0 881 040 A2	12/02/98	Europe			X	
LTUE	WO 99/25520	05/27/99	WO			X	
LTUE	WO 00/54325	09/14/00	WO			X	
LTUE	EP 1 066 925 A2	01/10/01	Europe			X	
LTUE	EP 1 092 505 A2	04/18/01	Europe			X	

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LTUE	Hu, Albert, Kevin Nguyen, Steve Wong, Xiuhua Zhang, Emanuel Sachs, and Peter Renteln. 1993. "Concurrent Deployment of Run by Run Controller Using SCC Framework." IEEE/SEMI International Semiconductor Manufacturing Science Symposium. pp. 126-132.
LTUE	Hu, Albert, He Du, Steve Wong, Peter Renteln, and Emanuel Sachs. 1994. "Application of Run by Run Controller to the Chemical-Mechanical Planarization Process." IEEE/CPMT International Electronics Manufacturing Technology Symposium. pp. 371-378.
LTUE	Smith, Taber, Duane Boning, James Moyne, Arnon Hurwitz, and John Curry. June 1996. "Compensating for CMP Pad Wear Using Run by Run Feedback Control." Proceedings of the Thirteenth International VLSI Multilevel Interconnection Conference. pp. 437-439.
LTUE	Suzuki, Junichi and Yoshikazu Yamamoto. 1998. "Toward the Interoperable Software Design Models: Quartet of UML, XML, DOM and CORBA." Proceedings IEEE International Software Engineering Standards Symposium. pp. 1-10.
LTUE	Klein, Bruce. June 1999. "Application Development: XML Makes Object Models More Useful." Informationweek. pp. 1A-6A.

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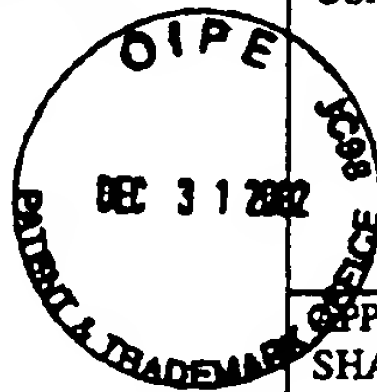
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LTUE	5,889,991	03/30/99	Consolatti et al.			12/06/96
LTUE	6,183,345 B1	02/06/01	Kamono et al.			03/20/98
LTUE	6,253,366 B1	06/26/01	Mutschler, III			03/31/99
LTUE	6,298,470 B1	10/02/01	Breiner et al.			04/15/99

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EXAMINER'S INITIALS	PUBLICATION / PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
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LTUE	WO 01/52055 A3	07/19/01	WO			X	
LTUE	WO 01/57823 A2	08/09/01	WO			X	
LTUE	EP 1 182 526 A2	02/27/02	Europe			X	
LTUE	WO 02/17150 A1	02/28/02	WO			X	
LTUE	WO 02/33737 A2	04/25/02	WO			X	

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LTUE	Chemali, Chadi El, James Moyne, Kareemullah Khan, Rock Nadeau, Paul Smith, John Colt, Jonathan Chapple-Sokol, and Tarun Parikh. July/August 2000. "Multizone Uniformity Control of a Chemical Mechanical Polishing Process Utilizing a Pre- and Postmeasurement Strategy." J. Vac. Sci. Technol. A, Vol. 18(4). pp. 1287-1296. American Vacuum Society.
LTUE	Jensen, Alan, Peter Renteln, Stephen Jew, Chris Raeder, and Patrick Cheung. June 2001. "Empirical-Based Modeling for Control of CMP Removal Uniformity." Solid State Technology, Vol. 44, No. 6, pp. 101-102, 104, 106. Cowan Publ. Corp.: Washington, D.C.
LTUE	Sarfaty, Moshe, Arulkumar Shanmugasundram, Alexander Schwarm, Joseph Paik, Jimin Zhang, Rong Pan, Martin J. Seamons, Howard Li, Raymond Hung, and Suketu Parikh. April/May 2002. "Advance Process Control Solutions for Semiconductor Manufacturing." IEEE/SEMI Advanced Semiconductor Manufacturing Conference. pp. 101-106.
LTUE	October 4, 2002. International Search Report from PCT/US01/22833.
LTUE	October 23, 2002. International Search Report from PCT/US01/27406.
LTUE	November 7, 2002. International Search Report from PCT/US02/19061.
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LTUE	November 12, 2002. International Search Report from PCT/US02/19063.

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				APPLICANT SHANMUGASUNDRAM et al.				RECEIVED JUL 24 2003 GROUP 1700	
				FILING DATE August 31, 2001		GROUP 2122			
U.S. PATENT DOCUMENTS									
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LTUE	3,205,485	09/07/65	Noltingk			10/21/60			
LTUE	3,229,198	01/11/66	Libby			09/28/62			
LTUE	4,000,458	12/28/76	Miller et al.			08/21/75			
LTUE	4,302,721	11/24/81	Urbanek et al.			05/15/79			
LTUE	4,750,141	06/07/88	Judell et al.			11/26/85			
LTUE	4,757,259	07/12/88	Charpentier			11/05/86			
LTUE	4,938,600	07/03/90	Into			02/09/89			
LTUE	5,283,141	02/01/94	Yoon et al.			03/05/92			
LTUE	5,338,630	08/16/94	Yoon et al.			11/18/93			
LTUE	5,485,082	01/16/96	Wisspeintner et al.			04/05/90			
LTUE	5,497,381	03/05/96	O'Donoghue et al.			06/01/95			
LTUE	5,511,005	04/23/96	Abbe et al.			02/16/94			
LTUE	5,519,605	05/21/96	Cawlfeld			10/24/94			
LTUE	5,526,293	06/11/96	Mozumder et al.			12/17/93			
LTUE	5,541,510	06/30/96	Danielson			04/06/95			
LTUE	5,546,312	08/13/96	Mozumder et al.			02/24/94			
LTUE	5,553,195	09/03/96	Meijer			09/29/94			
LTUE	5,602,492	02/11/97	Cresswell et al.			04/28/94			
LTUE	5,617,023	04/01/97	Skalski			02/02/95			
LTUE	5,627,083	05/06/97	Tounai			05/12/95			
LTUE	5,642,296	06/24/97	Saxena			07/29/93			
LTUE	5,646,870	07/08/97	Krivokapic et al.			02/13/95			
LTUE	5,649,169	07/15/97	Berezin et al.			06/20/95			
LTUE	5,654,903	08/05/97	Reitman et al.			11/07/95			
LTUE	5,663,797	09/02/97	Sandhu			05/16/96			
LTUE	5,665,199	09/09/97	Sahota et al.			06/23/95			
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EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE
LTUE	5,667,424	09/16/97	Pan			09/25/96
LTUE	5,674,787	10/07/97	Zhao et al.			01/16/96
LTUE	5,719,796	02/17/98	Chen			12/04/95
LTUE	5,735,055	04/07/98	Hochbein et al.			04/23/96
LTUE	5,761,064	06/02/98	La et al.			10/06/95
LTUE	5,777,901	07/07/98	Berezin et al.			09/29/95
LTUE	5,787,021	07/28/98	Samaha			12/18/95
LTUE	5,787,269	07/28/98	Hyodo			09/19/95
LTUE	5,825,913	10/20/98	Rostami et al.			07/18/95
LTUE	5,857,258	01/12/99	Penzes et al.			05/12/94
LTUE	5,910,846	06/08/99	Sandhu			08/19/97
LTUE	5,943,237	08/24/99	Van Boxem			10/17/97
LTUE	5,960,185	09/28/99	Nguyen			06/24/96
LTUE	5,961,369	10/05/99	Bartels et al.			06/04/98
LTUE	5,978,751	11/02/99	Pence et al.			02/25/97
LTUE	6,017,771	01/25/00	Yang et al.			04/27/98
LTUE	6,036,349	03/14/00	Gombar			07/26/96
LTUE	6,064,759	05/16/00	Buckley et al.			11/06/97
LTUE	6,072,313	06/06/00	Li et al.			06/17/97
LTUE	6,097,887	08/01/00	Hardikar et al.			10/27/97
LTUE	6,108,092	08/22/00	Sandhu			06/08/99
LTUE	6,127,263	10/03/00	Parikh			07/10/98
LTUE	6,136,163	10/24/00	Cheung et al.			03/05/99
LTUE	6,141,660	10/31/00	Bach et al.			07/16/98
LTUE	6,143,646	11/07/00	Wetzel			06/03/97
LTUE	6,148,099	11/14/00	Lee et al.			07/03/97
LTUE	6,148,239	11/14/00	Funk et al.			12/12/97

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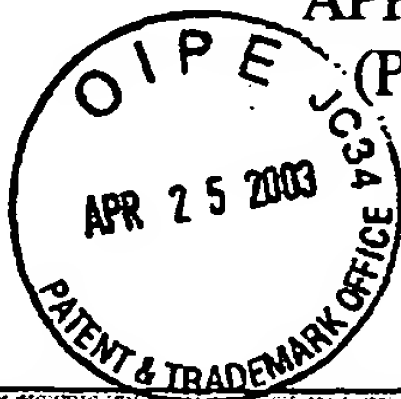
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LTUE	6,159,075	12/12/00	Zhang			10/13/99
LTUE	6,159,644	12/12/00	Satoh et al.			03/06/96
LTUE	6,161,054	12/12/00	Rosenthal et al.			09/17/98
LTUE	6,169,931	01/02/01	Runnels			06/29/98
LTUE	6,172,756	01/09/01	Chalmers et al.			12/11/98
LTUE	6,173,240	01/09/01	Sepulveda et al.			11/02/98
LTUE	6,191,864	02/20/01	Sandhu			02/29/00
LTUE	6,204,165	03/20/01	Ghoshal			06/24/99
LTUE	6,210,983	04/03/01	Atchison et al.			06/15/99
LTUE	6,214,734	04/10/01	Bothra et al.			11/20/98
LTUE	6,217,412	04/17/01	Campbell et al.			08/11/99
LTUE	6,222,936	04/24/01	Phan et al.			09/13/99
LTUE	2001/0001755	05/24/01	Sandhu et al.			12/29/00
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LTUE	6,246,972	06/12/01	Klimasauskas			05/27/99
LTUE	6,276,989	08/21/01	Campbell et al.			08/11/99
LTUE	6,280,289	08/28/01	Wiswesser et al.			11/02/98
LTUE	6,284,622	09/04/01	Campbell et al.			10/25/99
LTUE	6,287,879	09/11/01	Gonzales et al.			08/11/99
LTUE	6,290,572	09/18/01	Hofmann			03/23/00
LTUE	6,304,999	10/16/01	Toprac et al.			10/23/00
LTUE	2001/0030366	10/18/01	Nakano et al.			03/07/01
LTUE	6,307,628	10/23/01	Lu et al.			08/18/00
LTUE	6,314,379	11/06/01	Hu et al.			12/04/97
LTUE	2001/0039462	11/08/01	Mendez et al.			04/02/01
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LTUE	6,324,481	11/27/01	Atchison et al.			06/15/99
LTUE	6,334,807	01/01/02	Lebel et al.			04/30/99
LTUE	6,336,841	01/08/02	Chang			03/29/01
LTUE	2002/0032499	03/14/02	Wilson et al.			05/04/01
LTUE	6,360,133	03/19/02	Campbell et al.			06/17/99
LTUE	6,360,184	03/19/02	Jacquez			03/26/97
LTUE	6,368,883	04/09/02	Bode et al.			08/10/99
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LTUE	6,388,253	05/14/02	Su			11/02/00
LTUE	2002/0058460	05/16/02	Lee et al.			09/14/01
LTUE	6,395,152	05/28/02	Wang			07/02/99
LTUE	6,397,114	05/28/02	Eryurek et al.			05/03/99
LTUE	6,405,096	06/11/02	Toprac et al.			08/10/99
LTUE	6,405,144	06/11/02	Toprac et al.			01/18/00
LTUE	2002/0070126	06/13/02	Sato et al.			09/19/01
LTUE	2002/0081951	06/27/02	Boyd et al.			02/20/02
LTUE	2002/0089676	07/11/02	Pecen et al.			04/26/00
LTUE	2002/0102853	08/01/02	Li et al.			12/20/01
LTUE	2002/0107599	08/08/02	Patel et al.			01/25/01
LTUE	6,435,952	08/20/02	Boyd et al.			06/30/00
LTUE	6,438,438	08/20/02	Takagi et al.			01/02/98
LTUE	2002/0113039	08/22/02	Mok et al.			02/16/01
LTUE	6,440,295	08/27/02	Wang			02/04/00
LTUE	2002/0127950	09/12/02	Hirose et al.			03/08/01
LTUE	6,455,937	09/24/02	Cunningham			03/17/99

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LTUE	2002/0149359	10/17/02	Crouzen et al.			08/18/01
LTUE	6,479,902	11/12/02	Lopatin et al.			06/29/00
LTUE	6,479,990	11/12/02	Mednikov et al.			06/18/01
LTUE	2002/0185658	12/12/02	Inoue et al.			06/14/01
LTUE	2002/0193902	12/19/02	Shanmugasundram et al.			06/18/02
LTUE	2002/0197745	12/26/02	Shanmugasundram et al.			08/31/01
LTUE	2002/0197934	12/26/02	Paik			11/30/01
LTUE	2002/0199082	12/26/02	Shanmugasundram et al.			06/18/02
LTUE	6,503,839	01/07/03	Gonzales et al.			07/03/01
LTUE	2003/0020909	01/30/03	Adams et al.			04/09/01
LTUE	2003/0020928	01/30/03	Ritzdorf et al.			07/09/01
	6,517,413	02/11/03	Hu et al.			10/25/00

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LTUE	61-66104	04/04/86	Japan			X	
LTUE	3-202710	09/04/91	Japan			X	
LTUE	8-23166	01/23/96	Japan			X	
LTUE	9-246547	09/19/97	Japan			X	
LTUE	WO 98/05066	02/05/98	WIPO			X	
LTUE	10-34522	02/10/98	Japan			X	
LTUE	0 869 652	10/07/98	Europe			X	
LTUE	WO 99/09371	02/25/99	WIPO			X	
LTUE	0 910 123	04/21/99	Europe			X	
LTUE	0 932 194	07/28/99	Europe			X	
LTUE	WO 00/00874	01/06/00	WIPO			X	
LTUE	2000-183001	06/30/00	Japan			X	

EXAMINER

DATE CONSIDERED

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INFORMATION DISCLOSURE CITATION IN AN APPLICATION (PTO-1449)				ATTY. DOCKET NO. 005918 USA/FPS/MMCS/APC		SERIAL NO. 09/943,955	
				APPLICANT SHANMUGASUNDRAM et al.			
				FILING DATE August 31, 2001		GROUP 2122	
FOREIGN PATENT DOCUMENTS							
EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
						Yes	No
LTUE	1 071 128	01/24/01	Europe			X	
LTUE	WO 01/18623	03/15/01	WIPO			X	
LTUE	WO 01/25865	04/12/01	WIPO			X	
LTUE	434103	05/16/01	Taiwan			X	
LTUE	436383	05/28/01	Taiwan			X	
LTUE	455938	09/21/01	Taiwan			X	
LTUE	455976	09/21/01	Taiwan			X	
LTUE	2001-284299	10/12/01	Japan			X	
LTUE	2001-305108	10/31/01	Japan			X	
LTUE	2002-9030	01/11/02	Japan			X	
LTUE	WO 02/074491	09/26/02	WIPO			X	
LTUE	2002-343754	11/29/02	Japan			X	
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LTUE	Herrmann, D. 1988. "Temperature Errors and Ways of Elimination for Contactless Measurement of Shaft Vibrations (Abstract)." <i>Technisches Messen</i> TM , vol. 55, no. 1, pp. 27-30. West Germany.						
LTUE	Lin, Kuang-Kuo and Costas J. Spanos. November 1990. "Statistical Equipment Modeling for VLSI Manufacturing: An Application for LPCVD." <i>IEEE Transactions on Semiconductor Manufacturing</i> , v. 3, n. 4, pp. 216-229.						
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LTUE	Burke, Peter A. June 1991. "Semi-Empirical Modelling of SiO ₂ Chemical-Mechanical Polishing Planarization." <i>VMIC Conference, 1991 IEEE</i> , pp. 379-384. IEEE.						
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<p align="center">INFORMATION DISCLOSURE CITATION IN AN APPLICATION (PTO-1449)</p> <p align="center">O I P E APR 25 2003 PATENT & TRADEMARK OFFICE</p>		ATTY. DOCKET NO. 005918 USA/FPS/MIMC/APC	SERIAL NO. 09/943,955 RECEIVED APR 28 2003
		APPLICANT SHANMUGASUNDARAM et al. Technology Center 2100	
		FILING DATE August 31, 2001	GROUP 2122
OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)			
LTUE	May 1992. "Laser Ablation Endpoint Detector." <i>IBM Technical Disclosure Bulletin</i> , pp. 333-334.		
LTUE	Spanos, Costas J., Hai-Fang Guo, Alan Miller, and Joanne Levine-Parrill. November 1992. "Real-Time Statistical Process Control Using Tool Data." <i>IEEE Transactions on Semiconductor Manufacturing</i> , v. 5, n. 4, pp. 308-318.		
LTUE	February 1993. "Electroless Plating Scheme to Hermetically Seal Copper Features." <i>IBM Technical Disclosure Bulletin</i> , pp. 405-406.		
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LTUE	Muller-Heinzerling, Thomas, Ulrich Neu, Hans Georg Nurnberg, and Wolfgang May. March 1994. "Recipe-Controlled Operation of Batch Processes with Batch X." <i>ATP Automatisierungstechnische Praxis</i> , vol. 36, no. 3, pp. 43-51.		
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LTUE	Hu, Albert, He Du, Steve Wong, Peter Renteln, and Emmanuel Sachs. 1994. "Application of Run by Run Controller to the Chemical-Mechanical Planarization Process." <i>IEEE/CPMT International Electronics Manufacturing Technology Symposium</i> , pp. 371-378.		
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SHANMUGASUNDRAM et al.

Technology Center 2100

FILING DATE

August 31, 2001

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LTUE	Boning, Duane S., William P. Moyne, Taber H. Smith, James Moyne, Ronald Telfeyan, Arnon Hurwitz, Scott Shellman, and John Taylor. October 1996. "Run by Run Control of Chemical-Mechanical Polishing." <i>IEEE Transactions on Components, Packaging, and Manufacturing Technology—Part C</i> , vol. 19, no. 4, pp. 307-314.
LTUE	Zhe, Ning, J. R. Moyne, T. Smith, D. Boning, E. Del Castillo, Yeh Jinn-Yi, and Hurwitz. November 1996. "A Comparative Analysis of Run-to-Run Control Algorithms in Semiconductor Manufacturing Industry (Abstract)." <i>IEEE/SEMI 1996 Advanced Semiconductor Manufacturing Conference Workshop</i> , pp. 375-381.
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LTUE	Mullins, J. A., W. J. Campbell, and A. D. Stock. October 1997. "An Evaluation of Model Predictive Control in Run-to-Run Processing in Semiconductor Manufacturing (Abstract)." <i>Proceedings of the SPIE – The International Society for Optical Engineering Conference</i> , vol. 3213, pp. 182-189.
LTUE	Reitman, E. A., D. J. Friedman, and E. R. Lory. November 1997. "Pre-Production Results Demonstrating Multiple-System Models for Yield Analysis (Abstract)." <i>IEEE Transactions on Semiconductor Manufacturing</i> , vol. 10, no. 4, pp. 469-481.
LTUE	Durham, Jim and Myriam Roussel. 1997. "A Statistical Method for Correlating In-Line Defectivity to Probe Yield." <i>IEEE/SEMI Advanced Semiconductor Manufacturing Conference</i> , pp. 76-77.
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LTUE	Fang, S. J., A. Barda, T. Janecko, W. Little, D. Outley, G. Hempel, S. Joshi, B. Morrison, G. B. Shinn, and M. Birang. 1998. "Control of Dielectric Chemical Mechanical Polishing (CMP) Using and Interferometry Based Endpoint Sensor." <i>International Proceedings of the IEEE Interconnect Technology Conference</i> , pp. 76-78.

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		RECEIVED APR 28 2003		
O I P E APR 25 2003 PATENT & TRADEMARK OFFICE		APPLICANT SHANMUGASUNDRAM et al.		
		FILING DATE August 31, 2001		GROUP 2122
OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)				
LTUE	Ouma, Dennis, Duane Boning, James Chung, Greg Shinn, Leif Olsen, and John Clark. 1998. "An Integrated Characterization and Modeling Methodology for CMP Dielectric Planarization." <i>Proceedings of the IEEE 1998 International Interconnect Technology Conference</i> , pp. 67-69.			
LTUE	Boning, Duane S., Jerry Stefani, and Stephanie W. Butler. February 1999. "Statistical Methods for Semiconductor Manufacturing." <i>Encyclopedia of Electrical Engineering</i> , J. G. Webster, Ed.			
LTUE	McIntosh, John. March 1999. "Using CD-SEM Metrology in the Manufacture of Semiconductors (Abstract)." <i>JOM</i> , vol. 51, no. 3, pp. 38-39.			
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LTUE	Meckl, P. H. and K. Umemoto. August 1999. "Achieving Fast Motions in Semiconductor Manufacturing Machinery (Abstract)." <i>Proceedings of the 1999 IEEE International Conference on Control Applications</i> , vol. 1, pp. 725-729. Kohala Coast, HI.			
LTUE	Khan, K., C. El Chemali, J. Moyne, J. Chapple-Sokol, R. Nadeau, P. Smith, C., and T. Parikh. October 1999. "Yield Improvement at the Contact Process Through Run-to-Run Control (Abstract)." <i>24th IEEE/CPMT Electronics Manufacturing Technology Symposium</i> , pp. 258-263.			
LTUE	Ruegsegger, Steven, Aaron Wagner, James S. Freudenberg, and Dennis S. Grimard. November 1999. "Feedforward Control for Reduced Run-to-Run Variation in Microelectronics Manufacturing." <i>IEEE Transactions on Semiconductor Manufacturing</i> , vol. 12, no. 4.			
LTUE	November 1999. "How to Use EWMA to Achieve SPC and EPC Control." <i>International Symposium on NDT Contribution to the Infrastructure Safety Systems</i> , Tores, Brazil. http://www.ndt.net/abstract/ndtiss99/data/35.htm			
LTUE	Edgar, T. F., W. J. Campbell, and C. Bode. December 1999. "Model-Based Control in Microelectronics Manufacturing." <i>Proceedings of the 38th IEEE Conference on Decision and Control</i> , Phoenix, Arizona, vol. 4, pp. 4185-4191.			
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LTUE	Cheung, Robin. October 18, 2000. "Copper Interconnect Technology." <i>AVS/CMP User Group Meeting</i> , Santa Clara, CA.			
LTUE	Edgar, Thomas F., Stephanie W. Butler, W. Jarrett Campbell, Carlos Pfeiffer, Christopher Bode, Sung Bo Hwang, K. S. Balakrishnan, and J. Hahn. November 2000. "Automatic Control in Microelectronics Manufacturing: Practices, Challenges, and Possibilities (Abstract)." <i>Automatica</i> , v. 36, n. 11.			
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INFORMATION DISCLOSURE CITATION IN AN APPLICATION (PTO-1449)				ATTY. DOCKET NO. 005918 USA/FPS/MMCS/APC		SERIAL NO. 09/943,955 RECEIVED JUL 07 2003			
				APPLICANT SHANMUGASUNDRAM et al.				Technology Center 2100	
				FILING DATE August 31, 2001		GROUP 2122			
U.S. PATENT DOCUMENTS									
EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE			
LTUE	3,767,900	10/23/73	Chao et al.			06/23/71			
LTUE	3,920,965	11/18/75	Sohrwardy			03/04/74			
LTUE	4,368,510	01/11/83	Anderson			10/20/80			
LTUE	4,616,308	10/07/86	Morshedi et al.			12/02/85			
LTUE	4,663,703	05/05/87	Axelby et al.			10/02/85			
LTUE	5,347,446	09/13/94	Iino et al.			02/10/92			
LTUE	5,519,605	05/21/96	Cawlfeld			10/24/94			
LTUE	6,128,016	10/03/00	Coelho et al.			12/20/96			
LTUE	6,219,711	04/17/01	Chari			10/01/97			
LTUE	6,249,712	06/19/01	Boiquaye			09/25/96			
LTUE	6,278,899	08/21/01	Piche et al.			10/06/98			
LTUE	2001/0039462	11/08/01	Mendez et al.			04/02/01			
LTUE	2001/0040997	11/15/01	Tsap et al.			05/15/01			
LTUE	2002/0128805	09/12/02	Goldman et al.			12/26/00			
FOREIGN PATENT DOCUMENTS									
EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translation			
						Yes	No		
LTUE	EP 1 067 757	01/10/01	Europe			X			
LTUE	WO 01/33277	05/10/01	WO			X			
LTUE	WO 02/31613 A2	04/18/02	WO			X			
LTUE	WO 02/31613 A3	04/18/02	WO			X			
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				APPLICANT SHANMUGASUNDRAM et al.			
				FILING DATE August 31, 2001		GROUP 2122	
U.S. PATENT DOCUMENTS							
EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE	
LTUE	5,901,313	05/04/99	Wolf et al.			09/02/97	
LTUE	6,002,989	12/14/99	Shiba et al.			04/01/97	
LTUE	6,094,688	07/25/00	Mellen-Garnett et al.			03/12/98	
LTUE	6,340,602	01/22/02	Johnson et al.			02/12/01	
LTUE	6,345,288	02/05/02	Reed et al.			05/15/00	
LTUE	6,368,879	04/09/02	Toprac			09/22/99	
LTUE	US-2002/0107604	08/08/02	Riley et al.			12/06/00	
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LTUE	6,482,660	11/19/02	Conchieri et al.			03/19/01	
LTUE	6,567,717	05/20/03	Krivokapic et al.			01/19/00	
FOREIGN PATENT DOCUMENTS							
EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
						Yes	No
LTUE	WO 99/59200	11/18/99	WIPO			X	
LTUE	WO 01/52319	07/19/01	WIPO			X	
OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)							
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**INFORMATION DISCLOSURE
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ATTY. DOCKET NO.
005918
USA/FPS/MMCS/APC

SERIAL NO.
09/943,955

APPLICANT
SHANMUGASUNDRAM et al.

FILING DATE
August 31, 2001

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LTUE	4,901,218	02/13/90	Cornwell			03/04/88
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LTUE	5,761,065	06/02/98	Kittler et al.			03/30/95
LTUE	5,862,054	01/19/99	Li			02/20/97
LTUE	5,912,678	06/15/99	Saxena et al.			04/14/97
LTUE	5,926,690	07/20/99	Toprac et al.			05/28/97
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LTUE	6,150,664	11/21/00	Su			06/29/99
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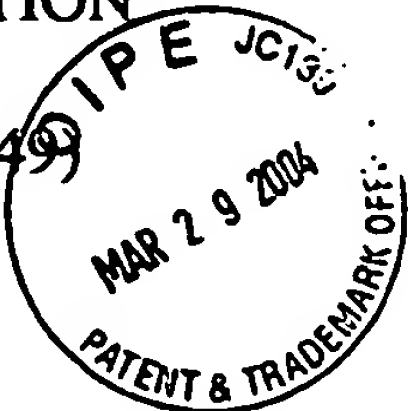
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FOREIGN PATENT DOCUMENTS							
EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
						Yes	No
LTUE	0 397 924 A1	11/22/90	Europe			X	
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LTUE	March 29, 2002. Office Action for U.S. Serial No. 09/363,966, filed July 29, 1999.						
LTUE	June 20, 2002. Office Action for U.S. Serial No. 09/619,044, filed July 19, 2000.						
LTUE	September 26, 2002. Office Action for U.S. Serial No. 09/637,620, filed August 11, 2000.						
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LTUE	April 9, 2003. Office Action for U.S. Serial No. 09/928,474, filed August 14, 2001.						
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LTUE	December 11, 2003. Office Action for U.S. Serial No. 09/943,383, filed August 31, 2001.						
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LTUE	January 20, 2004. Office Action for U.S. Serial No. 09/927,444, filed August 13, 2001.						
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/Lynette Umez Eronini/				(09/07/2006)			

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INFORMATION DISCLOSURE CITATION IN AN APPLICATION (PTO-1449)				ATTY. DOCKET NO. 005918 USA/ FPS/MMCS/APC		SERIAL NO. 09/943,955	
				APPLICANT SHANMUGASUNDRAM et al.			
				FILING DATE August 31, 2001		GROUP 1765	
U.S. PATENT DOCUMENTS							
EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE	
LTUE	4,957,605	09/18/90	Hurwitt et al.			04/17/89	
LTUE	5,369,544	11/29/94	Mastrangelo			04/05/93	
LTUE	5,444,837	08/22/95	Bomans et al.			12/29/93	
LTUE	5,665,214	09/09/97	Iturralde			05/03/95	
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LTUE	5,824,599	10/20/98	Schacham-Diamand et al.			01/16/96	
LTUE	5,825,356	10/20/98	Habib et al.			03/18/96	
LTUE	5,831,851	11/03/98	Eastburn et al.			03/21/95	
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LTUE	5,871,805	02/16/99	Lemelson			04/08/96	
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LTUE	6,012,048	01/04/00	Gustin et al.			05/30/97	
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LTUE	6,059,636	05/09/00	Inaba et al.			07/09/98	
LTUE	6,096,649	08/01/00	Jang			10/25/99	
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LTUE	6,226,563 B1	05/01/01	Lim			09/04/98	
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LTUE	6,281,127 B1	08/28/01	Shue			04/15/99	
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LTUE	6,317,643 B1	11/13/01	Dmochowski			03/31/99	
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LTUE	2002/0193899 A1	12/19/02	Shanmugasundram et al.			05/01/02	
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LTUE	6,515,368 B1	02/04/03	Lopatin et al.			12/07/01	
LTUE	6,517,414 B1	02/11/03	Tobin et al.			03/10/00	
LTUE	6,528,409 B1	03/04/03	Lopatin et al.			04/29/02	
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LTUE	6,580,958 B1	06/17/03	Takano			11/22/99	
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LTUE	6,660,633 B1	12/09/03	Lopatin et al.			02/26/02	
LTUE	6,708,074 B1	03/16/04	Chi et al.			08/11/00	
LTUE	6,708,075 B2	03/16/04	Sonderman et al.			11/16/01	
LTUE	6,728,587 B2	04/27/04	Goldman et al.			12/27/00	
EXAMINER <div style="text-align: center;">/Lynette Umez Eronini/</div>				DATE CONSIDERED <div style="text-align: center;">(09/07/2006)</div>			

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				APPLICANT SHANMUGASUNDRAM et al.			
				FILING DATE August 31, 2001		GROUP 1765	
FOREIGN PATENT DOCUMENTS							
EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
						Yes	No
LTUE	EP 0 932 195 A1	07/28/99	EP			X	
LTUE	EP 1 083 470 A2	03/14/01	EP			X	
LTUE	GB 2 365 215 A	02/13/02	GB			X	
OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)							
LTUE	Sun, S.C. 1998. "CVD and PVD Transition Metal Nitrides as Diffusion Barriers for Cu Metallization." <i>IEEE</i> . pp. 243-246.						
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LTUE	Eisenbraun, Eric, Oscar van der Straten, Yu Zhu, Katharine Dovidenko, and Alain Kaloyeros. 2001. "Atomic Layer Deposition (ALD) of Tantalum-Based Materials for Zero Thickness Copper Barrier Applications" (Abstract). <i>IEEE</i> . pp. 207-209.						
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LTUE	Elers, Kai-Erik, Ville Saanila, Pekka J. Soininen, Wei-Min Li, Juhana T. Kostamo, Suvi Haukka, Jyrki Juhanoja, and Wim F.A. Besling. 2002. "Diffusion Barrier Deposition on a Copper Surface by Atomic Layer Deposition" (Abstract). <i>Advanced Materials</i> . Vol. 14, No. 13-14, pp. 149-153.						
LTUE	Peng, C.H., C.H. Hsieh, C.L. Huang, J.C. Lin, M.H. Tsai, M.W. Lin, C.L. Chang, Winston S. Shue, and M.S. Liang. 2002. "A 90nm Generation Copper Dual Damascene Technology with ALD TaN Barrier." <i>IEEE</i> . pp. 603-606.						
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LTUE	Wu, Z.C., Y.C. Lu, C.C. Chiang, M.C. Chen, B.T. Chen, G.J. Wang, Y.T. Chen, J.L. Huang, S.M. Jang, and M.S. Liang. 2002. "Advanced Metal Barrier Free Cu Damascene Interconnects with PECVD Silicon Carbide Barriers for 90/65-nm BEOL Technology." <i>IEEE</i> . pp. 595-598.						
LTUE	July 25, 2003. International Search Report for PCT/US02/24858.						
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LTUE	April 22, 2004. Office Action for U.S. Serial No. 09/998,372, filed November 30, 2001.						
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**INFORMATION DISCLOSURE
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APPLICATION
(PTO-1449)**

ATTY. DOCKET NO.
005918 USA/
FPS/MMCS/APC

SERIAL NO.
09/943,955

APPLICANT
SHANMUGASUNDRAM et al.

FILING DATE
August 31, 2001

**GROUP
1765**

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)


LTUE	April 28, 2004. Written Opinion for PCT/US02/19117.
LTUE	April 29, 2004. Written Opinion for PCT/US02/19061.
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/Lynette Umez Eronini/ (09/07/2006)

DATE CONSIDERED
(09/07/2006)

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				APPLICANT SHANMUGASUNDRAM et al.			
				FILING DATE August 31, 2001		GROUP 2122	
U.S. PATENT DOCUMENTS							
EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE	
L.T.M.E.	4,207,520	06/10/80	Flora et al.	324	238	04/06/78	
L.T.M.E.	4,209,744	06/24/80	Gerasimov et al.	324	241	03/27/78	
L.T.M.E.	4,609,870	09/02/86	Lale et al.	324	225	09/13/84	
L.T.M.E.	4,755,753	07/05/88	Chern	324	237	07/23/86	
L.T.M.E.	5,427,878	06/27/95	Corliss	430	30	05/16/94	
L.T.M.E.	5,534,289	07/09/96	Bilder et al.	427	8	01/03/95	
L.T.M.E.	5,867,389	02/02/99	Hamada et al.	700	121	11/26/96	
L.T.M.E.	6,041,263	03/21/00	Boston et al.	700	32	10/01/97	
L.T.M.E.	6,077,412	06/20/00	Ting et al.	205	143	10/30/98	
L.T.M.E.	6,271,670	08/07/01	Caffey	324	642	02/08/99	
L.T.M.E.	6,400,162	06/04/02	Mallory et al.	324	688	07/21/00	
L.T.M.E.	US 2002/0077031	06/20/02	Johansson et al.	451	6	07/06/01	
L.T.M.E.	6,442,496	08/27/02	Pasadyen et al.	702	83	08/08/00	
L.T.M.E.	6,563,308	05/13/03	Nagano et al.	324	230	03/27/01	
L.T.M.E.	6,587,744	07/01/03	Stoddard et al.	700	121	06/20/00	
FOREIGN PATENT DOCUMENTS							
EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
						Yes	No
L.T.M.E.	WO 01/11679	02/15/01	WIPO	—	—	X	
L.T.M.E.	WO 01/080306	10/25/01	WIPO	—	—	X	
OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)							
L.T.M.E.	Miller, G. L., D. A. H. Robinson, and J. D. Wiley. July 1976. "Contactless measurement of semiconductor conductivity by radio frequency-free-carrier power absorption." <i>Rev. Sci. Instrum.</i> , Volume 47, No. 7. pp. 799 - 805.						
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EXAMINER <i>Lynette J. Umrigar-Evans</i>				DATE CONSIDERED <i>5/2/2004</i>			

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		APPLICANT SHANMUGASUNDRAM et al.				
		FILING DATE August 31, 2001		GROUP 2122		
FOREIGN PATENT DOCUMENTS						
EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translation Yes No
OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)						
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L.J.M.-E	2002. "Microsense II - 5810: Non-Contact Capacitance Gaging Module." www.adetech.com .					
L.J.M.-E	08 August 2003. PCT International Search Report from PCT/US03/08513.					
L.J.M.-E	14 October 2003. PCT International Search Report from PCT/US02/21942.					
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L.J.M.-E	"NanoMapper wafer nanotopography measurement by ADE Phase Shift." http://www.phase-shift.com/nanomap.shtml . <i>no date</i>					
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L.J.M.-E	"ADE Technologies, Inc. - 6360." http://www.adetech.com/6360.shtml . <i>no date</i>					
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L.T.M.E	Boning, Duane et al. "Run by Run Control of Chemical-Mechanical Polishing." <i>IEEE Trans.</i> October 1996. Vol. 19, No. 4. pp. 307-314.
L.T.M.E	Moyne, James et al. "A Run-to-Run Control Framework for VLSI Manufacturing." <i>Microelectronic Processing '93 Conference Proceedings.</i> September 1993.
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L.T.M.E	Sachs, Emanuel et al. "Process Control System for VLSI Fabrication." <i>no date</i>
L.T.M.E	Chaudhry, Nauman et al. "Active Controller: Utilizing Active Databases for Implementing Multi-Step Control of Semiconductor Manufacturing." <i>University of Michigan.</i> pp. 1 - 24. <i>no date</i>
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EXAMINER <i>Lynette T. Hines-Ewing</i>	DATE CONSIDERED <i>1/28/2006</i>
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